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CA 2347593 A1 2001/11/15

(21) 2 347 593

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2001/05/15

(41) Mise à la disp. pub./Open to Public Insp.: 2001/11/15

(30) Priorité/Priority: 2000/05/15 (60/204,034) US

(51) Cl.Int.^{7}/Int.Cl.^{7} E04B 5/48

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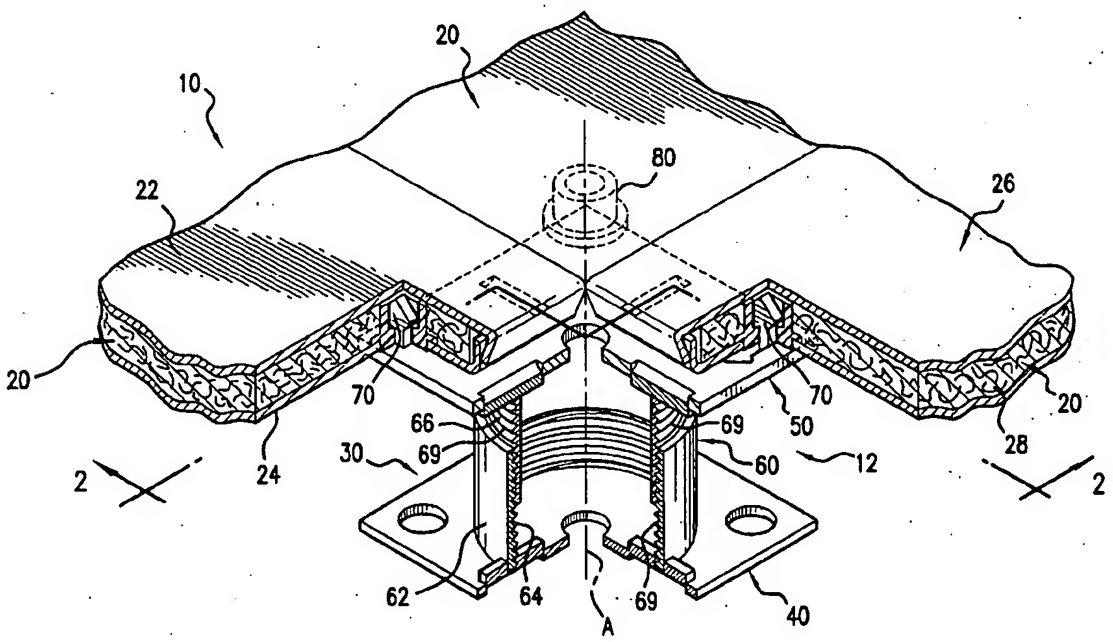
(54) Titre : SYSTEME DE FAUX PLANCHER

(54) Title: ACCESS FLOOR SYSTEM



(57) Abrégé/Abstract:
An access floor system including an access floor panel having a top surface and an opposite bottom surface and at least one pedestal. The pedestal includes a base portion for resting on a subfloor, a head portion and a jack interconnecting the base portion and the head portion, the head portion having an upper surface for engaging the bottom surface of the floor panel. A selected one of the upper surface of the head portion of the pedestal or the bottom surface of the floor panel comprises a protrusion extending therefrom, and the other of the upper surface of the head portion or bottom surface of the floor panel defines a receptacle therein, the receptacle being of a size to complementarily and detachably engage the protrusion. It is noted that this abstract is provided to comply with the rules requiring an abstract that will allow a searcher or other reader to ascertain quickly the subject matter of the technical disclosure. The abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims pursuant to 37 C.F.R. § 1.72(b).

Access Floor System

RELATED U.S. APPLICATION DATA

This application claims priority to U.S. provisional application Serial No. 60/204,034, filed on May 15, 2000. The 60/204,034 provisional patent application is herein incorporated by this reference in its entirety.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to access floor systems, and specifically to an access floor system which provides for detachable engagement between a pedestal and an access floor panel.

Background Art

Access flooring systems, also referred to as "raised floors," "computer floors," or "elevated floors," have been utilized in a variety of applications in which a plenum beneath a floor surface is required by the user. Traditionally, access floor systems have been heavily utilized in computer room environments, in which a significant amount of interstitial space beneath the floor structure is required to accommodate and manage cables, components and other electrical services. Increasingly, however, demand for access floor systems has grown as usage of access floor systems has become more common in other building environments such as cleanrooms, equipment rooms, and general purpose office space. Such applications benefit from other uses of the access floor plenum, such as the capability of housing HVAC componentry or other mechanical services.

An access floor system is made up of a plurality of individual square, modular access floor panels supported by adjustable height pedestals. When assembled, the

access floor panels form a deck upon which the contents of the room rest. Each access floor panel is a modular unit, which is removable, replaceable, and interchangeable with other panels. Each panel is constructed to meet the performance requirements of the entire floor system, including, for example, load bearing requirements, combustibility resistance, and corrosion resistance.

Installation of an access floor system in any building environment results in a reduction in the amount of occupant space in the building interior due to the plenum area created by the floor system. Whether the floor system is retrofitted into an existing building for which access floors were not originally contemplated, or installed in a building which was designed and constructed to accommodate conventional access floors, efficient space utilization is always a design concern. Existing buildings, for example, often have low ceilings which will not allow for utilization of an access floor system with pedestals measuring 24" or more in height. In construction of new buildings, significant savings may be realized from optimization of the access floor system profile for a given overall plenum area requirement. For example, a reduction in an access floor system overall height of 75 mm, assuming a 40-story building with access floors on each level, results in a reduction in building height of 3 meters, or the equivalent of one story. Thus, it is advantageous to provide an access flooring system which provides efficient space utilization for a range of specified plenum area requirements.

Access floor systems of the prior art generally include a range of components, including access floor panels, pedestals, connection hardware for attaching the panels to pedestals, and stringers, which maintain consistent spacing between pedestal when individual panels are removed for replacement or to access the plenum. Difficulty and expense of installation, removal and servicing of the access floor system is obviously related to the complexity involved in assembly of the access floor system and is often proportional to the number of discrete components needed to fabricate the system. Therefore, it is also advantageous to provide an access floor system with a minimum of

constituent parts, in an effort to simplify installation and service expense and to reduce the level of experience and expertise required of installation personnel.

Access floor systems of the prior art generally suffer from one or more deficiencies, including inter-panel misalignment, difficulty in installation or replacement of individual access floor panels within the access floor system, difficulty of the height adjustment of panels within the floor system, and overall instability of the floor system in response to lateral loads.

SUMMARY OF THE INVENTION

The disadvantages of the prior art are overcome by the present invention which, in one aspect, is an access floor system having at least one access floor panel which is supported by at least one pedestal. Each access floor panel has a top surface that forms the access floor surface and an opposite bottom surface. Each pedestal is comprised of a base portion which rests on the subfloor of the room, a head portion which engages the bottom surface of the access floor panel, and a jack interconnecting the base portion and the head portion.

The head portion of the pedestal and the bottom surface of the panel have a male-female mechanical connection therebetween. A protrusion extends from either the upper surface of the head portion of the pedestal or the bottom surface of the floor panel. The component not having the protrusion defines a corresponding receptacle of a size to complementarily and detachably engage the protrusion. Thus, the protrusion may be provided on the upper surface of the head portion, with a corresponding receptacle defined by the bottom surface of the floor panel, or vice versa.

In another aspect, the jack has an adjustable jack length between the base portion and the head portion. The jack is adjustable along a substantially vertical longitudinal axis between the base portion and the head portion.

In one embodiment, the jack comprises a first sleeve attached to the base portion and a complementary second sleeve attached to the head portion, the second sleeve being of a size to complementarily interconnect to the first sleeve. In one embodiment, the first and second sleeves are in coaxial telescopic relation to each other, such that at least a portion of the inner surface of the first sleeve engages at least a portion of the outer surface of the second sleeve. The first and second sleeves are cylindrical, and at least a portion of both the inner surface of the first sleeve and the outer surface of the second sleeve are complementarily threaded so that the first and second sleeves are in adjustable threaded engagement with each other.

BRIEF DESCRIPTION OF THE FIGURES OF THE DRAWINGS

Fig. 1 is a partial cross-sectional perspective view of an embodiment of the improved access floor system according to the present invention with certain parts broken away for clarity and other elements shown in phantom lines.

Fig. 2 is a section taken along line 2-2 in Fig. 1.

Fig. 3 is a top plan view of an embodiment of the head portion of the pedestal according to the present invention.

Fig. 4 is a side elevational view of Fig. 3.

Fig. 5 is a section taken along line 5 - 5 in Fig. 3.

Fig. 6 is a cross-sectional side elevational view of an embodiment of the receptacle in Fig. 2 according to the present invention.

Fig. 7 is a top plan view of an embodiment of the base portion of the pedestal according to the present invention.

Fig. 8 is a side elevational view of Fig. 7.

Fig. 9 is a section taken along line 9 - 9 in Fig. 7.

Fig. 10 is a sectional top plan view of a group of access floor panels assembled to form a portion of a floor system, with underlying pedestals shown in phantom lines.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is more particularly described in the following examples that are intended as illustrative only since numerous modifications and variations therein will be apparent to those skilled in the art. As used in the specification and in the claims, "a," "an," or "the" can mean one or more, depending upon the context in which it is used. The preferred embodiment is now described with reference to the figures, in which like numbers indicate like parts throughout the figures.

Referring to Fig. 1, the invention comprises an improved access floor system 10 having at least one access floor panel 20 which is supported by at least one pedestal 30. Typical installations of complete access floor systems 10 will fill an entire room, or an entire level of a building, with a matrix of access floor panels. As shown in Figs. 1 and 10, in an embodiment having a plurality of square floor panels 20, each panel 20 is supported at each of its four corners with a pedestal 30 which maintains the plenum space 12 between the subfloor 14 (shown in Fig. 2) and the access floor panels 20. In such a configuration, each pedestal 30 may support corner of four adjoining or abutting access floor panels 20. Other pedestal configurations utilizing more or fewer pedestals 30, however, are possible, provided adequate load support is maintained.

Referring now to Figs. 1 and 2, each access floor panel 20 has a top surface 22 and an opposite bottom surface 24. Access floor panels 20 may be constructed of a variety of materials. In some embodiments, the floor panel 20 includes an outer shell 26 constructed of sheet steel, aluminum or other suitable materials. The shell 26 may

be filled with core material 28, such as lightweight concrete, plastic, composite or wood, or may be left hollow. In other embodiments, the floor panel 20 may be constructed completely of solid wood or other structurally acceptable material. The top surface 22 of the floor panel 20 optionally may be covered with a covering (not shown), such as a high pressure laminate ("HPL"), vinyl, or carpet.

Each pedestal 30 is comprised of a base portion 40 which rests on the subfloor 14, a head portion 50 for engaging the access floor panel 20, and a jack 60 interconnecting the base portion 40 and the head portion 50. The jack 60 has a jack length L extending between the base and head portions 40, 50 which may be adjustable, such that the height of the pedestal 30, and thus the plenum space 12 beneath the access floor system 10, may be controlled by the user. The head portion 50 of the pedestal 30 and the bottom surface 24 of the floor panel 20 preferably have a male-female mechanical connection therebetween. A protrusion 70 extends from either the upper surface 52 of the head portion 50 of the pedestal 30 or the bottom surface 24 of the floor panel 20. The component not having the protrusion 70 defines a corresponding receptacle 80 of a size to complementarily and detachably engage the protrusion 70. Thus, as illustrated in the embodiments shown throughout the figures, the protrusion 70 may be provided on the upper surface 52 of the head portion 50, with a corresponding receptacle 80 defined by the bottom surface 24 of the floor panel 20.

Alternatively, the protrusion 70 may be on the bottom surface 24 of the floor panel 20 with the corresponding receptacle 80 defined by the upper surface 52 of the head portion 50. Another alternative is that the upper surface 52 of the head portion 50 has at least one protrusion 70 and at least one receptacle 80, and that the bottom surface 24 of the floor panel 20 also has at least one receptacle 80 and at least one protrusion 70 capable of engaging the corresponding protrusion 70 or receptacle 80 on the other component. It is further contemplated that one corner of the floor panel 20 may include a protrusion 70 while another corner of the same panel 20 may include a receptacle 80.

As shown in Figs. 3-5, the head portion 50 of the pedestal 30 may be fabricated from a sheet metal blank, stamped or otherwise manufactured to the specifications described herein. The head portion 50 may also be fabricated of other materials, such as aluminum or hard plastic, as will be apparent to one skilled in the art. Optional holes or apertures 56 may be drilled or stamped into the head portion 50 to eliminate non-essential component weight, to allow for drainage of fluids through the head portion 50 or for any other desired purpose.

The head portion 50 has an upper surface 52 which supports the access floor panel 20 and an opposite lower surface 54 which engages the jack 60. In the illustrated embodiment, at least one protrusion 70, which is sized to engage a corresponding receptacle 80 within the access floor panel 20, depends from the upper surface 52 of the head portion 50.

In the illustrated embodiment, four protrusions 70 are provided on a square head portion 50 to allow for attachment of the head portion 50 to the corners of four adjacent square access floor panels 20. The protrusions 70 are attached to the upper surface 52 of the head portion 50. One skilled in the art will recognize that various fastening methods, including welding or adhesive or other mechanical or chemical fastening methods may be suitable for attaching the protrusions 70 to the head portion 50. Alternatively, the protrusions 70 may be integral to the material which forms the head portion 50 itself. Additionally, though the head portion 50 is illustrated as being substantially square in shape, alternate shapes may be utilized, such as rectangular, round, oval, or any other suitable shape.

Still referring to Figs. 3-5, the head portion 50 may be manufactured by stamping a sheet metal blank to form the desired shape, and protrusions 70 may be formed from the same blank of material from which the head portion 50 is manufactured. After forming, the protrusions 70 depend from the upper surface 52 of the head portion 50 and are capable of insertion into a corresponding receptacle 80 in

the access floor panel 20. As described in greater detail below, the protrusion 70 may be formed in a shape so that at least a portion of the protrusion 70 corresponds generally to at least a portion of the shape of the receptacle 80 to enable secure attachment between the pedestal 30 and access floor panel 20.

The head portion 50 may be provided in one embodiment with one or more optional embossments 32 to facilitate resistance welding of the jack 60 to the head portion 50. In one embodiment, four embossments 32 are provided on the head portion 50 to facilitate manufacture of the pedestal 30. The embossments 32 ensure consistent contact between the jack 60 and the head portion 50, and provide concentrated contact areas which enable more reliable resistance welding of the head portion 50 to the jack 60.

Referring now to Figs. 7-9, the base portion 40 of the pedestal 30 is now described in detail. Like the head portion 50, the base portion 40 may be fabricated from a sheet metal blank, stamped or otherwise manufactured to the specifications described herein or from any other suitable material. Holes or apertures 56 may be provided in the base portion 40 for any purpose, including facilitating attachment of the base portion 40 to the subfloor 14 for added stability. The base portion 40 has a bottom surface 42, which contacts the building subfloor 14, and an opposite top surface 44, which engages the jack 60.

Optional embossments 32 which facilitate resistance welding may be also imparted to the base portion 40, in a similar configuration to that described in connection with the head portion 50. As illustrated in Figs. 7-9, the base portion 40 optionally may be provided with one or more finger tabs 46 to facilitate adjustment of the pedestal 30. The finger tabs 46 may be provided to the base portion 40 by any desired method, including by welding or otherwise attaching the tabs 46, or by stamping or otherwise manufacturing the finger tabs 46 from the same material from which the base portion 40 is manufactured. As described in further detail below, finger

tabs 46 enable manual rotation of the base portion 40 with respect to the head portion 50 of the pedestal 30, which in turn alters jack length L in the illustrated embodiment.

Referring now to Figs. 1-6, the protrusion 70 and receptacle 80 are now described in detail. In one embodiment, the receptacle 80 may be integrally formed from the same material that comprises the floor panel 20. For example, in embodiments wherein the outer shell 26 of the floor panel 20 is constructed of sheet metal, the receptacle 80 may be formed into the shell 26 itself by stamping the receptacle 80 into the sheet metal as part of the manufacturing process. In another embodiment, the receptacle 80 may be a separate bushing 82 inserted into the appropriate location on either the head portion 50 of the pedestal 30 or the floor panel 20. Such a bushing 82 may be constructed of a variety of different materials, including metal, plastic or rubber.

In one preferred embodiment, the receptacle 80 is a pliable bushing 82, constructed of a plastic, nylon or hard rubber material which is capable of withstanding repeated deformation. In such an embodiment, the receptacle 80 should be capable of engaging and disengaging a protrusion 70 at least once without destroying the receptacle 80. Preferably, a receptacle 80 material should be selected, such as those set forth above, that is capable of withstanding at least several years of normal use, including repeated engaging and disengaging of the protrusion 70, without permanent deformation of the receptacle 80. In a currently preferred embodiment, bushings 82 fabricated of nylon have been found to produce satisfactory results.

Figs. 1 and 2 illustrate an embodiment in which the receptacle 80 is a pliable bushing 82 embedded within the floor panel 20, such that a small portion 84 of the receptacle 80 protrudes below the bottom surface 24 of the floor panel 20. In such an embodiment, when used in an access floor system having a floor panel 20 and head portion 50 constructed of metal, contact between the metal panel 20 and the metal head portion 50 is minimized, thus decreasing grinding or squeaking which may occur when

slight relative movement occurs in a metal-to-metal contact. Instead, as shown in Fig. 1, the protruding portion 84 of the receptacle 80 bears on the upper surface 52 of the head portion 50 and acts as a cushion, minimizing unwanted vibration and noise during use of the access floor system 10. However, in other embodiments, the receptacle 80 may also be disposed within the floor panel 20 without protruding therefrom.

Preferably, the receptacle 80 is capable of detachably engaging the protrusion 70, such that repeated installation and removal of the access floor panel 20 is possible without substantial physical degradation of either the protrusion 70 or receptacle 80. The figures illustrate one such embodiment of the protrusion 70 and receptacle 80, having a repeatable snap-fit engagement. Referring to Figs. 2 and 6, a receptacle 80 having a non-uniform inner bore 86 in cross-sectional side view is illustrated. The inner bore 86 of the receptacle 80 has a first inner diameter D1 at the end of the receptacle 80 adjacent the bottom surface 24 of the floor panel 20. The inner bore 86 also has a second inner diameter D2, which is larger than the first inner diameter D1, at a location internal to the receptacle 80, forming a detent internal to the receptacle 80. Thus, the inner bore 86 of the receptacle 80 is narrower at the point where the protrusion 70 enters the receptacle 80, and becomes wider at a point of deeper insertion of the protrusion 70.

Such a receptacle 80 may be dimensioned to complementarily receive a protrusion 70 such as that illustrated in Figs. 3-5, which has a width W2 adjacent its tip 72 which is greater than the width W1 along the rest of its length 74. In such an embodiment, the protrusion 70 is captured and retained within the receptacle 80 when the floor panel 20 is installed. As the protrusion 70 is inserted into the receptacle 80, deformation of the inner bore 86 is required to pass the tip 72 of the protrusion 70 through the receptacle 80 and into the detent therein. By providing a protrusion tip 72 of a width W2 which is greater than the smallest inner diameter D1 of the receptacle inner bore 86, but which fits within a notch 88 created by a step in the inner bore 86, the desired snap-fit is created. In another embodiment, the protrusion 70 and receptacle

80 may be further dimensioned such that the selected receptacle material is stressed at levels below its elastic limit or yield point by insertion and removal of the protrusion 70. The inner bore 86 may be dimensioned so that the second inner diameter D2 is slightly less than the width W2 of the tip 72 of the protrusion 70, so that when the protrusion 70 is fully inserted into the receptacle 80, the inner bore 86 may be slightly deformed by the tip 72 of the protrusion 70, preferably below the elastic limit or yield point of the receptacle material. Referring now to Fig. 2, in such an embodiment, the receptacle 80 exerts a retaining force on the protrusion 70, tending to hold the panel 20 in place. Alternatively, the protrusion 70 and receptacle 80 may be dimensioned such that, when assembled, there is clearance between the protrusion 70 and receptacle 80.

In other embodiments, either the receptacle 80, protrusion 70, or both may have a uniform shape in cross section. For example, the protrusion 70 may have a substantially uniform width along its entire length. Optionally, in such an embodiment, at least part of the inner bore 86 of the receptacle 80 may contact the protrusion 70 to ensure a tight and secure engagement between the protrusion 70 and receptacle 80. In such a configuration, the protrusion 70 causes a slight deformation of the receptacle 80, or interference fit, when the floor panel 20 is installed.

The illustrated embodiment depicts an arrangement wherein the protrusion 70 is located on the head portion 50 and the receptacle 80 is within the panel 20. Alternately, the locations of the protrusion 70 and receptacle 80 may be reversed, such that the protrusion 70 is located on the floor panel 20 and the receptacle 80 is fixed to the head portion 50. Additionally, though the receptacle 80 has been described herein as being pliable and engaging a rigid protrusion 70, the receptacle 80 may be rigid and may engage a pliable protrusion 70. Alternatively, both the receptacle 80 and protrusion 70 may be pliable, or both may be rigid.

As shown in Figs. 1 and 2, between the head portion 50 and base portion 40, a jack 60 is provided which enables the installer of the access floor system to control the

height above the subfloor at which the access floor panels 20 are maintained. The jack 60 has a jack length L that is adjustable between a minimum and maximum jack length. The jack 60 is adjustable along a substantially vertical longitudinal axis A between the base portion 40 and the head portion 50. Adjustability of individual pedestals 30 allows the installer to control the height of the entire access floor system 10, and allows the installer to account for inconsistent subfloor conditions by adjusting the height of individual pedestals 30 to produce a uniformly level surface condition.

In one embodiment, each pedestal 30 includes a jack 60 having a first sleeve 62 and a complementary second sleeve 66. The first sleeve 62 is attached to the top surface 44 of the base portion 40, and the second sleeve 66 is attached to the lower surface 54 of the head portion 50. If embossments 32 are provided on the base portion 40 and head portion 50 as described above, the corresponding sleeves 62, 66 may be easily affixed to those structures by resistance welding. Other methods of attachment, mechanical, chemical or otherwise, may also be utilized to assemble the pedestal 30.

In the illustrated embodiment, the first sleeve 62 and second sleeve 66 are cylindrical, however, other shapes, including but not limited to square, rectangular, or oval cross sections, will be apparent to one skilled in the art. The second sleeve 66 is sized to complementarily interconnect with the first sleeve 62, such that the first and second sleeves 62, 66 operate in coaxial telescopic relation to each other. In such an embodiment, the first sleeve 62 may be larger than the second sleeve 66, such that the inner dimensions of the second sleeve 66 are at least slightly larger than the outer dimensions of the first sleeve 62. Alternatively, the relative dimensions of the first and second sleeves 62, 66 may be opposite of the illustrated embodiment, such that the first sleeve 62 fits within the second sleeve 66. The jack length L may then be adjusted by moving the first and second sleeves 62, 66 relative to each other along the axis A.

In the illustrated embodiment, at least a portion of the inner surface 64 of the first sleeve 62 and at least a portion of the outer surface 68 of the second sleeve 66

comprise complementary threads 69 so that the first and second sleeves 62, 66 are in threaded engagement with each other. In such an embodiment, the jack length L may be adjusted by rotating the first and second sleeves 62, 66 relative to each other. When the desired jack length L is reached, the frictional forces between the threaded sleeves are sufficient to maintain the position of the jack 60, and thereby maintain the desired jack length L.

Such a configuration facilitates assembly and height adjustment of access floor panels 20 by allowing the installer convenient and precise control over the spacing between the head portion 50 and the base portion 40 of the pedestal 30. To adjust the height of any pedestal 30, the installer need only remove an adjacent access floor panel 20, grasp the base portion 40, and rotate the base portion 40 in either direction.

As best shown in Figs. 3-5, to facilitate adjustment of jack length L by the installer, one or more finger tabs 46 or other grasping means may be provided which protrude from the base portion 40. Such finger tabs 46 may be welded to the top surface 44 of the base portion 40, stamped from the material which makes up the base portion 40 itself, or provided by other securing means (not shown). Alternatively, finger tabs or other grasping means may be provided on the jack 60, such as on the exterior of the first sleeve 62.

When adjustment of the jack 60 produces a satisfactory floor surface and plenum space 12, the base portion 40 may optionally be fastened to the subfloor 14 by adhesive, bolts, or other means (not shown). As discussed in more detail below, attachment of the base portion 40 to the subfloor 14 contributes to added stability of the system 10 under normal use conditions.

The above description pertains to one preferred embodiment of the jack 60, and is not intended to foreclose other embodiments of the jack 60. For example, a strip gear jack, automotive jack or other jack (not shown) may be utilized. As a further example,

sleeves without threads (not shown) may be utilized instead of the threaded sleeves described above, and a plurality of holes (not shown) may be formed along the longitudinal sides of the first and second sleeves 62, 66, such that the sleeves may be pinned to one another through selected aligned holes to maintain a selected jack length L. Other embodiments of the jack 60, which are regarded as being within the scope of the present invention, will be apparent to those skilled in the art.

According to the invention, stability of the access floor system 10 under lateral loading conditions is improved over the existing state of the art. For purposes of this specification, "lateral loading" refers to forces exerted on the access floor panel 20 parallel to its top surface 22, and perpendicular to the longitudinal axis A of the pedestals 30. Lateral loading of access floor systems is a common occurrence caused primarily by foot traffic or by sliding or rolling of objects from one individual panel 20 to a neighboring panel 20. Attachment of the base portion 40 to the subfloor 14 as described above provides some contribution to lateral stability. Lateral stability is drastically improved, however, by providing a pedestal 30 having a wide diameter jack 60 and large base portion 40 and head portion 50 footprints.

A large-footprint base portion 40 and head portion 50 improves resistance of the access floor system 10 to lateral loading by reducing the tendency of the pedestal 30 to tip and rock under lateral loads. Additionally, use of an increased outer diameter in the components which make up the jack 60, i.e., the first and second sleeves 62, 66 as described in the embodiment above, reduces the stresses concentrated at the points of connection between the jack 60 and the head portion 50 and base portion 40. Thus, a wide-stance pedestal 30 with a more rigid frame is produced according to the invention disclosed herein. In turn, instability and rocking of the access floor system 10 under lateral loads applied during use of the access floor system 10 are minimized.

An additional feature of the improved access floor system 10 is that the system provides for automatic alignment of the access floor panels 20 with respect to one

another. Because the location of the protrusions 70 on the head portion 50 and the receptacles 80 within the access floor panels 20 may be controlled, those locations may be selected to provide consistent spacing between neighboring panels 20.

The above described pedestal 30 and its constituent components may be utilized to construct access floor system 10 using a broad variety of access floor panels 20. For example, the "low profile" access floor system which is depicted in the figures may be created, in which the panel 20 has a nominal thickness of ½" and is a 12" x 12" square in its outer perimeter. As shown in Fig. 1, the panel 20 in such a system is a composite laminate in which a core of cement board, particle board, plastic core material or other similar material is encased in sheet metal. Other access floor system configurations may also be constructed according to the invention, incorporating access floor panels 20 made of steel, cement, aluminum, wood, or other materials. The invention may be utilized in panel systems having any selected panel dimensions, including "standard" 24" x 24" panels. Additionally, a plurality of plenum dimensions may be provided by different embodiments of the invention. The illustrated embodiment provides an adjustable plenum which ranges from 1.250" to 2.125". Alternate systems may be constructed according to the invention which provide 24" or more of plenum space.

Although the present invention has been described with reference to specific details of certain embodiments thereof, it is not intended that such details should be regarded as limitations upon the scope of the invention except as and to the extent that they are included in the accompanying claims.

What I claim is:

1. An access floor system, comprising:

   a. an access floor panel having a top surface and an opposite bottom surface; and

   b. at least one pedestal comprising a base portion for resting on a subfloor, a head portion and a jack interconnecting the base portion and the head portion, the head portion having an upper surface for engaging the bottom surface of the floor panel,

wherein a selected one of the upper surface of the head portion of the pedestal or the bottom surface of the floor panel comprises a protrusion extending therefrom, and wherein the other of the upper surface of the head portion or bottom surface of the floor panel defines a receptacle therein, the receptacle being of a size to complementarily and detachably engage the protrusion.

2. The access floor system of Claim 1, wherein the protrusion extends from the upper surface of the head portion and the bottom surface of the floor panel defines the receptacle therein.

3. The access floor system of Claim 1, wherein the protrusion extends from the bottom surface of the floor panel and the upper surface of the head portion defines the receptacle therein.

4. The access floor system of Claim 2, wherein the protrusion is permanently attached to the upper surface of the head portion.

5. The access floor system of Claim 2, wherein the head portion is formed of a selected material and the protrusion is integrally formed from the same selected material that forms the head portion.

6. The access floor system of Claim 1, wherein the protrusion and receptacle form an interference fit therebetween.

7. The access floor system of Claim 1, wherein a selected one of the protrusion or the receptacle comprises a pliable material capable of repeated deformation.

8. The access floor system of Claim 7, wherein the receptacle comprises a bushing fabricated of a pliable material capable of repeated deformation.

9. The access floor system of Claim 8, wherein the protrusion extends from the upper surface of the head portion and the bottom surface of the floor panel defines the receptacle therein and wherein at least a portion of the bushing extends below the bottom surface of the floor panel.

10. The access floor system of Claim 1, wherein the receptacle comprises an inner bore having a non-uniform cross section in side view.

11. The access floor system of Claim 10, wherein the inner bore comprises a detent therein for detachably engaging the protrusion.

12. The access floor system of Claim 1, wherein the head portion is substantially square having four corners and comprises four protrusions, one protrusion extending from the upper surface of the head portion adjacent each corner thereof.

13. The access floor system of Claim 12, wherein the floor panel is substantially square having four corners and defines four receptacles therein, one receptacle adjacent each corner thereof, each receptacle for receiving a respective one of the four protrusions therein.

14. An access floor system, comprising:

a. an access floor panel having a top surface and an opposite bottom surface; and

b. at least one pedestal having a base portion, a head portion and a jack having a jack length interconnecting the base portion and the head portion, the base portion for resting on a subfloor and the head portion for engaging the bottom surface of the floor panel,

wherein the jack is adjustable along a substantially vertical longitudinal axis between the base portion and the head portion for varying the jack length.

15. The access floor system of Claim 14, wherein the jack comprises a first sleeve and a complementary second sleeve of a size to complementarily interconnect to the first sleeve, the first sleeve attached to the base portion and the second sleeve attached to the head portion, the first and second sleeves being in coaxial telescopic relation to each other.

16. The access floor system of Claim 15, wherein the first sleeve is larger than the second sleeve, and wherein the at least a portion of the inner surface of the first sleeve engages at least a portion of the outer surface of the second sleeve.

17. The access floor system of Claim 16, wherein the first sleeve and second sleeve are cylindrical, and wherein at least a portion of the inner surface of the first sleeve and at least a portion of the outer surface of the second sleeve comprise complementary threads so that the first and second sleeves are in threaded engagement with each other.

18. The access floor system of Claim 17, wherein the base portion comprises a top surface and an opposite bottom surface, the bottom surface for contacting the subfloor and the top surface connected to the jack, the base portion further comprising at least one tab protruding from the top surface of the base portion.

19. The access floor system of Claim 17, wherein the base portion comprises a top surface and an opposite bottom surface, the bottom surface for contacting the

subfloor and the top surface connected to the jack, the base portion further comprising at least one tab protruding from the outer surface of the first sleeve.

20. An access floor system, comprising:

a. an access floor panel having a top surface and an opposite bottom surface;

b. at least one pedestal having a base portion, a head portion and a jack having a jack length interconnecting the base portion and the head portion, the base portion for resting on a subfloor and the head portion for engaging the bottom surface of the floor panel; and

c. means for varying the length of the jack along a substantially vertical longitudinal axis between the base portion and the head portion.

21. A method of forming an access floor system, comprising:

a. providing an access floor panel having a top surface and an opposite bottom surface;

b. providing at least one pedestal comprising a base portion for resting on a subfloor, a head portion and a jack interconnecting the base portion and the head portion, the head portion having an upper surface for engaging the bottom surface of the floor panel, wherein a the upper surface of the head portion of the pedestal comprises a protrusion extending therefrom, and wherein the bottom surface of the floor panel defines a receptacle

therein, the receptacle being of a size to complementarily and detachably engage the protrusion; and

c. assembling the access floor panel and the at least one pedestal by inserting a selected protrusion into a selected receptacle.

ABSTRACT

An access floor system including an access floor panel having a top surface and an opposite bottom surface and at least one pedestal. The pedestal includes a base portion for resting on a subfloor, a head portion and a jack interconnecting the base portion and the head portion, the head portion having an upper surface for engaging the bottom surface of the floor panel. A selected one of the upper surface of the head portion of the pedestal or the bottom surface of the floor panel comprises a protrusion extending therefrom, and the other of the upper surface of the head portion or bottom surface of the floor panel defines a receptacle therein, the receptacle being of a size to complementarily and detachably engage the protrusion. It is noted that this abstract is provided to comply with the rules requiring an abstract that will allow a searcher or other reader to ascertain quickly the subject matter of the technical disclosure. The abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims pursuant to 37 C.F.R. § 1.72(b).

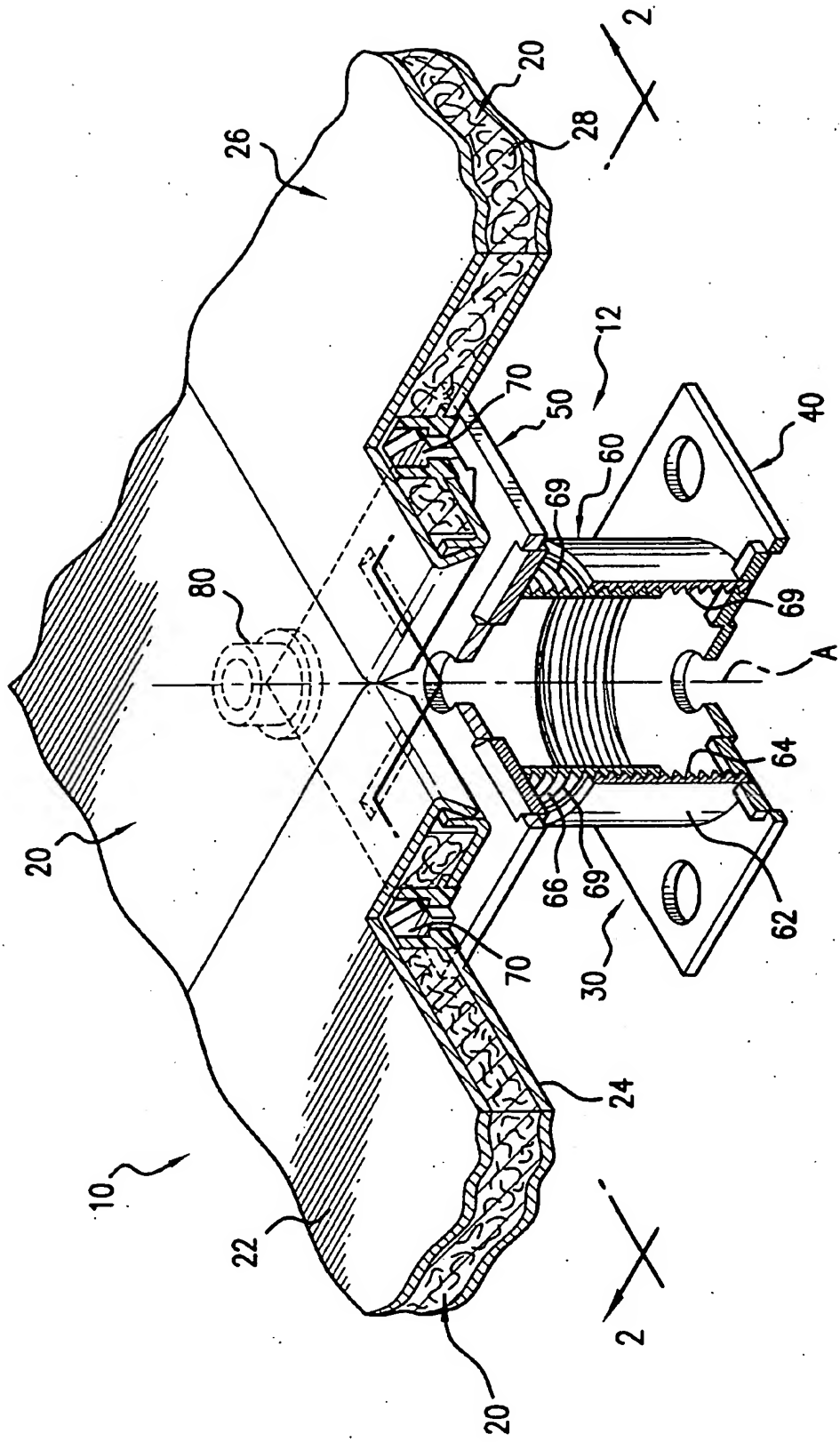


FIG. 1

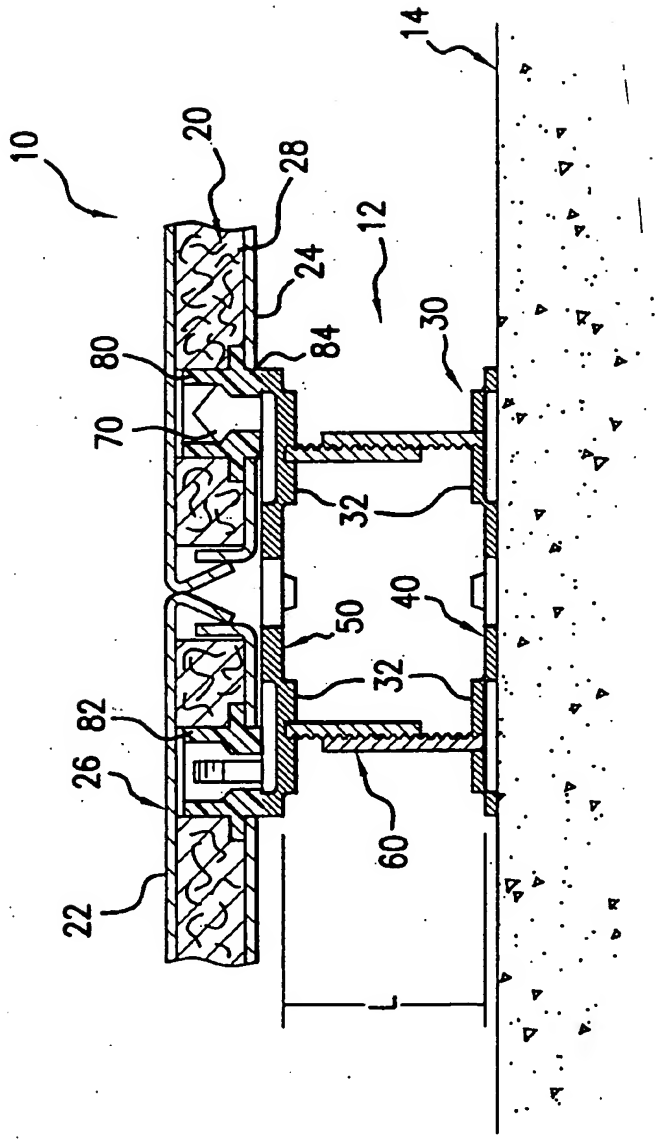


FIG.2

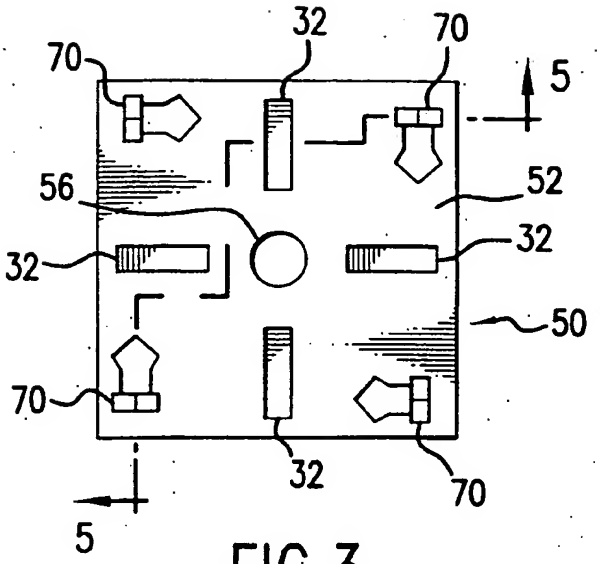


FIG.3

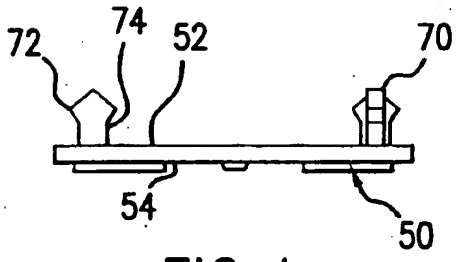


FIG.4

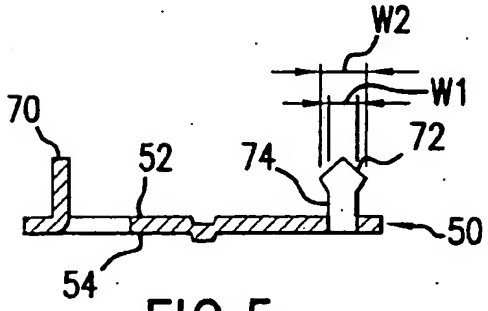


FIG.5

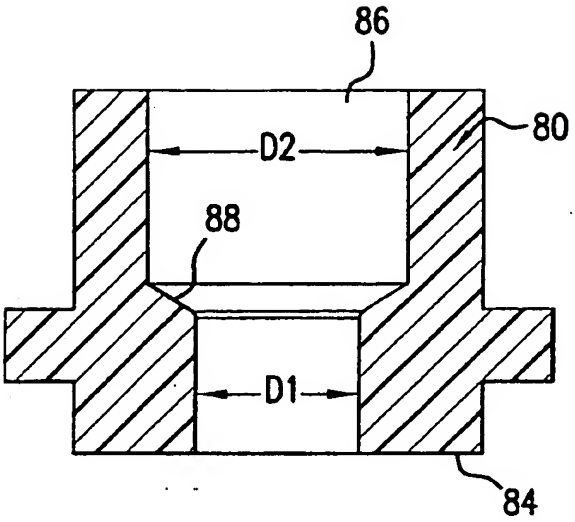


FIG.6

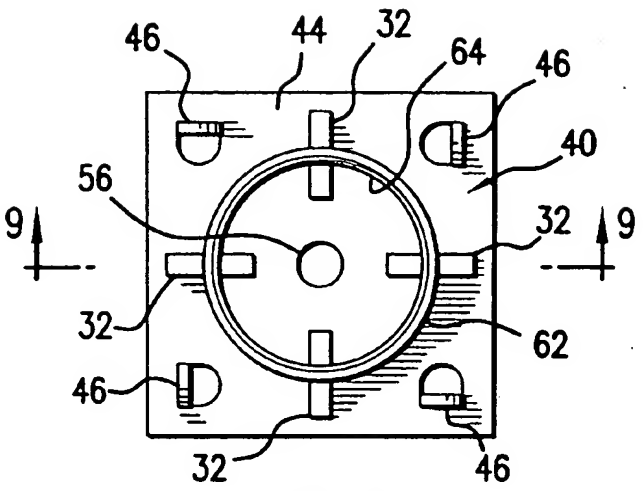


FIG.7

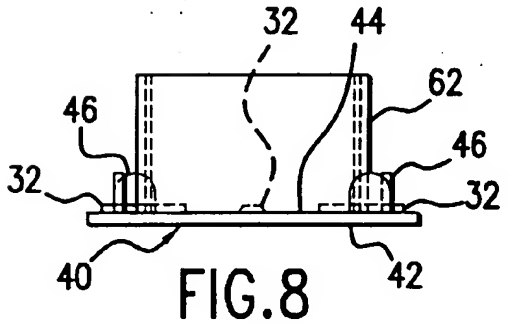


FIG.8

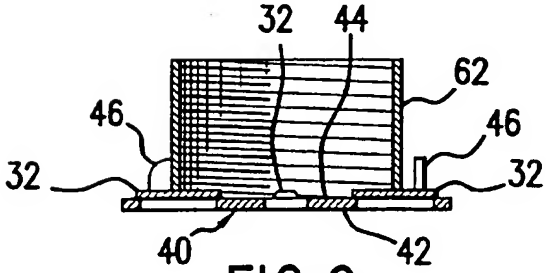


FIG.9

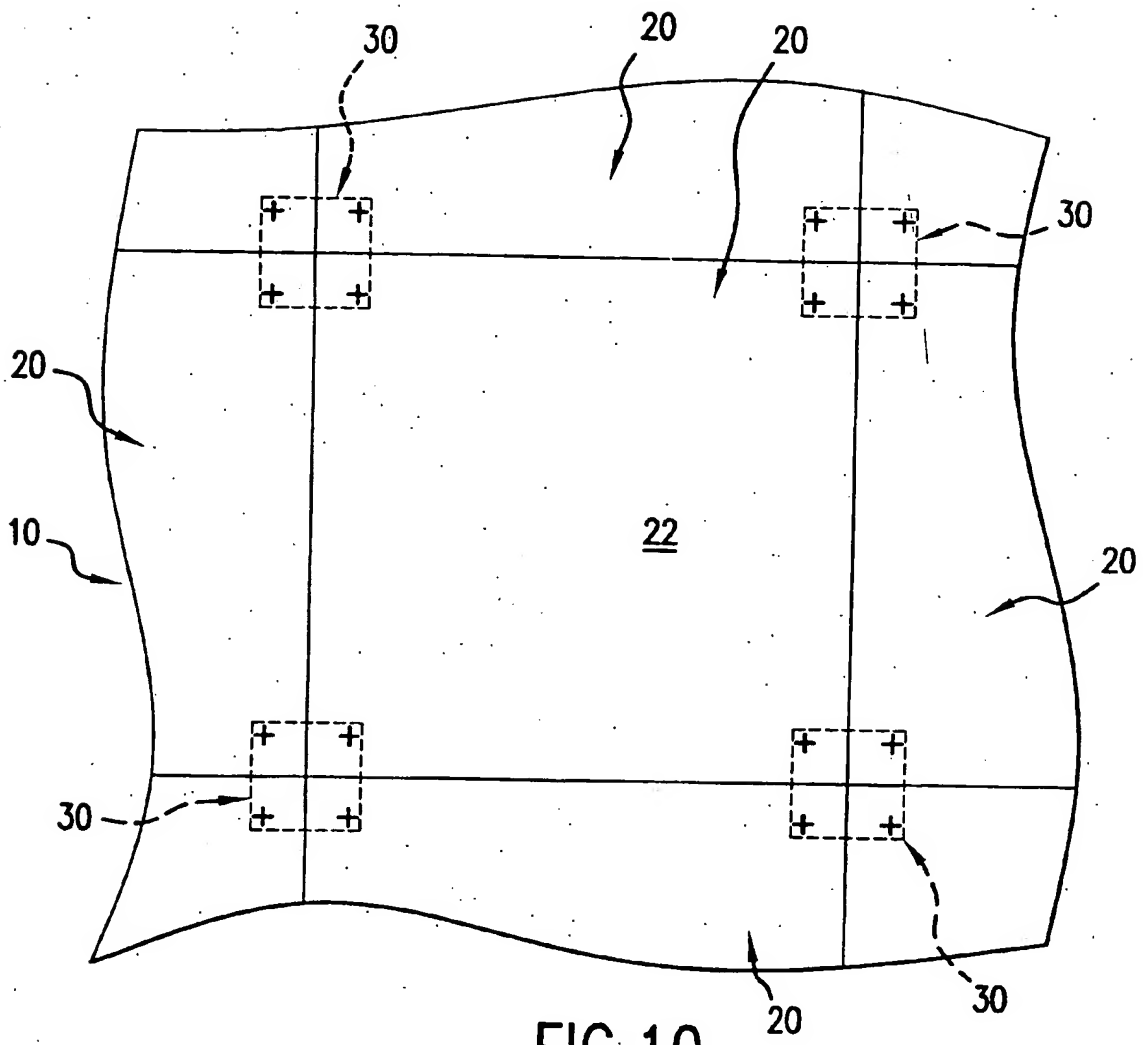


FIG.10